

HAMMOND VALVE

ACTUATION SIZING CHARTS

JANUARY, 2002

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2 PIECE BALL VALVE		
BRONZE	CARBON STEEL	STAINLESS STEEL
8400 SERIES		

VALVE SIZE (INCHES)	PNEUMATIC A/A	PNEUMATIC S/R	ELECTRIC
1/4	MC2	MC2S4	MCR100I
3/8	MC2	MC2S4	MCR100I
1/2	MC2	MC2S4	MCR100I
3/4	MC2	MC3S4	MCR100I
1	MC2	MC3S4	MCR200I
1 1/4	MC2	MC5S4	MCR200I
1 1/2	MC3	MC5S4	MCR200I
2	MC3	MC7S4	MCR300I

3 PIECE BALL VALVE		
BRONZE	CARBON STEEL	STAINLESS STEEL
8600 SERIES		

VALVE SIZE (INCHES)	PNEUMATIC A/A	PNEUMATIC S/R	ELECTRIC
1/4	MC2	MC2S4	MCR100I
3/8	MC2	MC2S4	MCR100I
1/2	MC2	MC2S4	MCR100I
3/4	MC2	MC3S4	MCR100I
1	MC2	MC5S4	MCR200I
1 1/4	MC3	MC7S4	MCR300I
1 1/2	MC5	MC14S4	MCR675I
2	MC7	MC22S4	MCR675I

PNEUMATIC ACTUATOR SIZING BASED ON 80 PSI AIR PRESSURE

THE ACTUATORS LISTED ABOVE ARE FOR USE WITH SEAT MATERIAL 01- VIRGIN PTFE OR 02 REINFORCED PTFE ONLY

FLANGED BALL VALVES
150 # CLASS
9100/9800 SERIES
LINE PRESSURE 0 - 285 PSI

VALVE SIZE (INCHES)	PNEUMATIC A/A	PNEUMATIC S/R	ELECTRIC
1/2	MC2	MC2S4	MCR100I
3/4	MC2	MC2S4	MCR100I
1	MC2	MC3S4	MCR200I
1 1/2	MC2	MC5S4	MCR200I
2	MC3	MC7S4	MCR300I
3	MC7	MC14S4	OA6-5
4	MC10	MC29S4	OA15-15
6	MC22	MC58S4	AT25-25

FLANGED BALL VALVES
300 # CLASS
9100/9800 SERIES
LINE PRESSURE 285 - 740 PSI

VALVE SIZE (INCHES)	PNEUMATIC A/A	PNEUMATIC S/R	ELECTRIC
1/2	MC2	MC2S4	MCR100I
3/4	MC2	MC2S4	MCR100I
1	MC2	MC3S4	MCR200I
1 1/2	MC2	MC5S4	MCR200I
2	MC5	MC10S4	MCR300I
3	MC10	MC22S4	OA6-5
4	MC10	MC29S4	OA15-15
6	MC22	MC58S4	AT25-25

PNEUMATIC ACTUATOR SIZING BASED ON 80 PSI AIR PRESSURE

THE ACTUATORS LISTED ABOVE ARE FOR USE WITH SEAT MATERIAL 01- VIRGIN PTFE OR 02 REINFORCED PTFE ONLY

FLANGED BALL VALVES**150 # CLASS****9900 SERIES****LINE PRESSURE 0 - 285 PSI**

VALVE SIZE (INCHES)	VALVE TORQUE	PNEUMATIC A/A	PNEUMATIC S/R	ELECTRIC
1/2	60	MC2	MC3S4	MCR100I
3/4	100	MC2	MC5S4	MCR200I
1	140	MC2	MC5S4	MCR200I
1 1/2	220	MC3	MC7S4	MCR300I
2	450	MC5	MC14S4	MCR675I
2 1/2	510	MC7	MC22S4	MCR675I
3	700	MC10	MC22S4	OA8-5
4	1600	MC22	MC58S4	AT25-25
6	2700	MC29	MC121S4	AT50-25
8	7200	MC121	MC236S4	BT100-25
10	8280	MC121	MC295S4	BT100-25
12	13200	MC236	C.F.	SRA6RS250-85

PNEUMATIC ACTUATOR SIZING BASED ON 80 PSI AIR PRESSURE

THE ACTUATORS LISTED ABOVE ARE FOR USE WITH SEAT MATERIAL 01- VIRGIN
PTFE OR 02 REINFORCED PTFE ONLY

BUTTERFLY VALVES
2" THRU 24" RESILIENT SEATED
SERVICE: WATER AND OTHER NON-LUBRICATED LIQUIDS

LINE PRESSURE (PSI)					
SIZE (INCHES)	ACTUATOR TYPE	50	100	150	200
2	PNEUMATIC A/A	MC2	MC2	MC2	MC2
	PNEUMATIC S/R	MC2S4	MC3S4	MC3S4	MC3S4
	ELECTRIC	MCRB200I	MCRB200I	MCRB200I	MCRB200I
2 1/2	PNEUMATIC A/A	MC2	MC2	MC2	MC2
	PNEUMATIC S/R	MC2S4	MC3S4	MC3S4	MC3S4
	ELECTRIC	MCRB200I	MCRB200I	MCRB200I	MCRB200I
3	PNEUMATIC A/A	MC2	MC2	MC2	MC2
	PNEUMATIC S/R	MC2S4	MC3S4	MC5S4	MC5S4
	ELECTRIC	MCRB200I	MCRB200I	MCRB200I	MCRB200I
4	PNEUMATIC A/A	MC3	MC5	MC5	MC5
	PNEUMATIC S/R	MC7S4	MC7S4	MC10S4	MC10S4
	ELECTRIC	MCRB300I	OA6-5	OA6-5	OA6-5
5	PNEUMATIC A/A	MC5	MC5	MC7	MC7
	PNEUMATIC S/R	MC10S4	MC14S4	MC14S4	MC14S4
	ELECTRIC	OA6-5	OA6-5	OA6-5	OA8-5
6	PNEUMATIC A/A	MC7	MC10	MC10	MC10
	PNEUMATIC S/R	MC22S4	MC22S4	MC22S4	MC29S4
	ELECTRIC	OA8-5	OA15-15	OA15-15	OA15-15
8	PNEUMATIC A/A	MC14	MC14	MC22	MC22
	PNEUMATIC S/R	MC58S4	MC58S4	MC58S4	MC58S4
	ELECTRIC	OA15-15	OA15-15	AT25-25	AT25-25
10	PNEUMATIC A/A	MC22	MC29	MC29	MC29
	PNEUMATIC S/R	MC58S4	MC58S4	MC58S4	MC121S4
	ELECTRIC	AT25-25	AT25-25	AT25-25	AT25-25
12	PNEUMATIC A/A	MC29	MC58	MC58	MC58
	PNEUMATIC S/R	MC121S4	MC121S4	MC121S4	MC121S4
	ELECTRIC	AT50-25	AT50-25	AT50-25	AT50-25
14	PNEUMATIC A/A	MC58	MC58	MC58	N/A
	PNEUMATIC S/R	MC121S4	MC121S4	MC121S4	N/A
	ELECTRIC	AT80-25	AT80-25	AT80-25	N/A
16	PNEUMATIC A/A	MC58	MC121	MC121	N/A
	PNEUMATIC S/R	MC121S4	MC236S4	MC236S4	N/A
	ELECTRIC	AT80-25	AT80-25	BT100-25	N/A
18	PNEUMATIC A/A	MC121	MC121	MC121	N/A
	PNEUMATIC S/R	MC236S4	MC236S4	MC295S4	N/A
	ELECTRIC	BT100-25	BT100-25	SRA6RS250	N/A
20	PNEUMATIC A/A	MC121	MC121	MC236	N/A
	PNEUMATIC S/R	MC236S4	MC295S4	N/A	N/A
	ELECTRIC	SRA6RS250	SRA6RS250	SRA6RS250	N/A
24	PNEUMATIC A/A	MC236	MC236	MC236	N/A
	PNEUMATIC S/R	N/A	N/A	N/A	N/A
	ELECTRIC	SRA6RS250	SRA6RS250	SRA6RS250	N/A

NOTE: PNEUMATIC ACTUATOR SIZING BASED ON 80 PSI AIR SUPPLY PRESSURE. IF LINE PRESSURE EXCEEDS LISTED PRESSURE, ADVANCE TO HIGHER PSI COLUMN FOR CORRECT ACTUATOR.

BUTTERFLY VALVES
2" THRU 24" RESILIENT SEATED
SERVICE: OIL AND OTHER LUBRICATING LIQUIDS

LINE PRESSURE (PSI)					
SIZE (INCHES)	ACTUATOR TYPE	50	100	150	200
2	PNEUMATIC A/A	MC2	MC2	MC2	MC2
	PNEUMATIC S/R	MC2S4	MC2S4	MC2S4	MC2S4
	ELECTRIC	MCRB200I	MCRB200I	MCRB200I	MCRB200I
2 1/2	PNEUMATIC A/A	MC2	MC2	MC2	MC2
	PNEUMATIC S/R	MC2S4	MC2S4	MC2S4	MC2S4
	ELECTRIC	MCRB200I	MCRB200I	MCRB200I	MCRB200I
3	PNEUMATIC A/A	MC2	MC2	MC2	MC2
	PNEUMATIC S/R	MC3S4	MC3S4	MC3S4	MC3S4
	ELECTRIC	MCRB200I	MCRB200I	MCRB200I	MCRB200I
4	PNEUMATIC A/A	MC2	MC2	MC2	MC2
	PNEUMATIC S/R	MC5S4	MC5S4	MC5S4	MC5S4
	ELECTRIC	MCRB200I	MCRB200I	MCRB200I	MCRB200I
5	PNEUMATIC A/A	MC5	MC5	MC5	MC5
	PNEUMATIC S/R	MC7S4	MC7S4	MC7S4	MC7S4
	ELECTRIC	MCRB300I	MCRB300I	MCRB300I	MCRB300I
6	PNEUMATIC A/A	MC5	MC5	MC5	MC5
	PNEUMATIC S/R	MC14S4	MC14S4	MC14S4	MC14S4
	ELECTRIC	OA6-5	OA6-5	OA6-5	OA6-5
8	PNEUMATIC A/A	MC10	MC10	MC10	MC10
	PNEUMATIC S/R	MC22S4	MC22S4	MC58S4	MC58S4
	ELECTRIC	OA8-5	OA8-5	OA15-15	OA15-15
10	PNEUMATIC A/A	MC14	MC14	MC22	MC22
	PNEUMATIC S/R	MC29S4	MC29S4	MC58S4	MC58S4
	ELECTRIC	AT25-25	AT25-25	AT25-25	AT25-25
12	PNEUMATIC A/A	MC22	MC22	MC29	MC29
	PNEUMATIC S/R	MC121S4	MC121S4	MC121S4	MC121S4
	ELECTRIC	AT25-25	AT25-25	AT25-25	AT25-25
14	PNEUMATIC A/A	MC29	MC29	MC58	N/A
	PNEUMATIC S/R	MC58S4	MC58S4	MC121S4	N/A
	ELECTRIC	AT50-25	AT50-25	AT50-25	N/A
16	PNEUMATIC A/A	MC58	MC58	MC58	N/A
	PNEUMATIC S/R	MC121S4	MC121S4	MC121S4	N/A
	ELECTRIC	AT50-25	AT80-25	AT80-25	N/A
18	PNEUMATIC A/A	MC58	MC58	MC121	N/A
	PNEUMATIC S/R	MC121S4	MC121S4	MC236S4	N/A
	ELECTRIC	AT50-25	AT80-25	AT80-25	N/A
20	PNEUMATIC A/A	MC58	MC121	MC121	N/A
	PNEUMATIC S/R	MC58S4	MC236S4	MC236S4	N/A
	ELECTRIC	AT80-25	AT80-25	BT100-25	N/A
24	PNEUMATIC A/A	MC121	MC121	MC121	N/A
	PNEUMATIC S/R	MC236S4	MC236S4	MC295S4	N/A
	ELECTRIC	BT100-25	BT100-25	BT100-25	N/A

NOTE: PNEUMATIC ACTUATOR SIZING BASED ON 80 PSI AIR SUPPLY PRESSURE. IF LINE PRESSURE EXCEEDS LISTED PRESSURE, ADVANCE TO HIGHER PSI COLUMN FOR CORRECT ACTUATOR.

BUTTERFLY VALVES
2" THRU 24" RESILIENT SEATED
SERVICE: AIR

LINE PRESSURE (PSI)					
SIZE (INCHES)	ACTUATOR TYPE	50	100	150	200
2	PNEUMATIC A/A	MC2	MC2	MC2	MC2
	PNEUMATIC S/R	MC5S4	MC5S4	MC5S4	MC5S4
	ELECTRIC	MCRB200I	MCRB300I	MCRB300I	MCRB300I
2 1/2	PNEUMATIC A/A	MC3	MC3	MC3	MC3
	PNEUMATIC S/R	MC7S4	MC7S4	MC7S4	MC7S4
	ELECTRIC	MCRB300I	MCRB300I	MCRB300I	MCRB300I
3	PNEUMATIC A/A	MC5	MC2	MC5	MC5
	PNEUMATIC S/R	MC10S4	MC10S4	MC10S4	MC10S4
	ELECTRIC	OA6-5	OA6-5	OA6-5	OA6-5
4	PNEUMATIC A/A	MC7	MC7	MC7	MC7
	PNEUMATIC S/R	MC14S4	MC14S4	MC14S4	MC14S4
	ELECTRIC	OA8-5	OA8-5	OA8-5	OA8-5
5	PNEUMATIC A/A	MC10	MC10	MC10	MC10
	PNEUMATIC S/R	MC22S4	MC22S4	MC22S4	MC22S4
	ELECTRIC	OA15-15	OA15-15	OA15-15	OA15-15
6	PNEUMATIC A/A	MC14	MC14	MC14	MC14
	PNEUMATIC S/R	MC58S4	MC58S4	MC58S4	MC58S4
	ELECTRIC	OA15-15	OA15-15	OA15-15	OA15-15
8	PNEUMATIC A/A	MC29	MC29	MC29	MC29
	PNEUMATIC S/R	MC58S4	MC58S4	MC121S4	MC121S4
	ELECTRIC	AT50-25	AT50-25	AT50-25	AT50-25
10	PNEUMATIC A/A	MC58	MC58	MC58	MC58
	PNEUMATIC S/R	MC121S4	MC121S4	MC121S4	MC121S4
	ELECTRIC	AT50-25	AT50-25	AT50-25	AT80-25
12	PNEUMATIC A/A	MC58	MC121	MC121	MC121
	PNEUMATIC S/R	MC121S4	MC236S4	MC236S4	MC236S4
	ELECTRIC	AT80-25	AT80-25	AT80-25	AT80-25
14	PNEUMATIC A/A	MC58	MC121	MC121	N/A
	PNEUMATIC S/R	MC121S4	MC236S4	MC236S4	N/A
	ELECTRIC	AT80-25	AT80-25	BT100-25	N/A
16	PNEUMATIC A/A	MC121	MC121	MC121	N/A
	PNEUMATIC S/R	MC236S4	MC295S4	MC295S4	N/A
	ELECTRIC	BT100-25	SRA6RS250	SRA6RS250	N/A
18	PNEUMATIC A/A	MC121	MC236	MC236	N/A
	PNEUMATIC S/R	MC295S4	N/A	N/A	N/A
	ELECTRIC	SRA6RS250	SRA6RS250	SRA6RS250	N/A
20	PNEUMATIC A/A	MC236	MC236	MC236	N/A
	PNEUMATIC S/R	N/A	N/A	N/A	N/A
	ELECTRIC	SRA6RS250	SRA6RS250	SRA6RS250	N/A
24	PNEUMATIC A/A	MC236	MC295	MC295	N/A
	PNEUMATIC S/R	N/A	N/A	N/A	N/A
	ELECTRIC	SRCR600-85	SRCR600-85	SRCR600-85	N/A

NOTE: PNEUMATIC ACTUATOR SIZING BASED ON 80 PSI AIR SUPPLY PRESSURE. IF LINE PRESSURE EXCEEDS LISTED PRESSURE, ADVANCE TO HIGHER PSI COLUMN FOR CORRECT ACTUATOR.

VALVE TORQUE INCH LBS.

THREADED BALL VALVE

SIZE	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
8400	20	40	40	50	100	140	190	240
8600	30	30	50	70	125	210	360	600

TORQUE'S ARE FOR 01 AND 02 SEATS IN CLEAN WATER SERVICE AT FULL RATED PSI

FLANGED BALL VALVE 150 LB CLASS

SIZE	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12
9100/9000	40	60	125	190	240	N/A	500	900	1900	N/A	N/A	N/A
9900	60	100	140	220	450	510	700	1,800	2700	7200	8280	13200

TORQUE'S ARE FOR 01 AND 02 SEATS IN CLEAN WATER SERVICE AT FULL RATED PSI

FLANGED BALL VALVE 300 LB CLASS

SIZE	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12
9100/9000	40	60	125	190	300	N/A	750	1000	2700	N/A	N/A	N/A

TORQUE'S ARE FOR 01 AND 02 SEATS IN CLEAN WATER SERVICE AT FULL RATED PSI

BUTTERFLY VALVE

TORQUE'S ARE BASED ON CLEAN WATER SERVICE FOR BUNA,EPDM, & VITON SEATS

SIZE	2	2 1/2	3	4	5	6	8	10	12
B/F 200 PSI	122	128	195	360	575	900	1690	2880	4360

TORQUE'S ARE BASED ON CLEAN WATER SERVICE FOR BUNA,EPDM, & VITON SEATS

SIZE	14	16	18	20	24
B/F 150 PSI	5508	7608	10200	13104	18888

CONSULT FACTORY FOR BF 30" OR ABOVE

Valve Torque Adjustment Factor

(Multiply the published break torque by factor shown to arrive at the proper actuator sizing)

<u>Service</u>	<u>Adjustment Factor</u>
1 Cycle/week	x1.5
1 to 2 Cycles/day	x0.0
15% Reinforced PTFE	x0.0
20 to 25% Reinforced PTFE	x1.3
Above 400° to 0° F	x1.25
Below -20° to 0° F	x1.25
Black Liquor, Lime Water	x1.8 to 2.0
Chlorine Gas, Oxygen	x1.5
Clean Non-lubricating liquids	x0.0
Dirty Air Slurry, Natural Gas, Dirty Slurry, Raw Water	x1.5 to 1.8
Modulating Service	x1.25
Oil, lubricating liquids	x0.0
On/Off Service	x0.0
Saturated Steam, Wet	x1.2
Superheated Steam, Dry	x1.5
Virgin PTFE	x0.0
Viscous Liquids, Molasses	x1.3

MC SERIES PNEUMATIC ACTUATOR TORQUE AT 80 PSI

DOUBLE ACTING	INCH POUNDS	SPRING RETURN	INCH POUNDS
MC2	203	MC2S4	86
MC3	302	MC3S4	139
MC5	526	MC5S4	209
MC7	734	MC7S4	324
MC10	1032	MC10S4	481
MC14	1479	MC14S4	642
MC22	2218	MC22S4	916
MC29	2958	MC29S4	1283
MC58	5865	MC58S4	2688
MC121	12132	MC121S4	5938
MC236	23665	MC236S4	9624
MC295	29581	MC295S4	12031

MC SERIES ELECTRIC ACTUATORS

MODEL	TORQUE/INCH POUNDS	SPEED/ 90 DEGREES
MCR100I	100	2.5
MCR200I	200	5
MCR300I	300	5
MCR675I	675	5
MCRB200I	200	5
MCRB300I	300	5
MCRB675I	675	5

LB SERIES ELECTRIC ACTUATORS

MODEL	TORQUE/INCH POUNDS	SPEED/ 90 DEGREES
OA6-5	540	5
OA8-5	720	5
OA15-15	1350	15
AT25-25	2250	25
AT50-25	4500	25
AT80-25	7000	25
BT100-25	9000	25
SRA6RS250	19000	85
BRS600-85	43000/54000	85